1941

Forty-Second and Forty-Third Annual Reports of the Commission of Fisheries of Virginia

Commission of Fisheries of Virginia

Forty-second and Forty-third Annual Reports

OF THE

COMMISSION OF FISHERIES OF VIRGINIA

FOR THE

FISCAL YEARS ENDING JUNE 30, 1940 AND JUNE 30, 1941

RICHMOND:
DIVISION OF PURCHASE AND PRINTING
1941

STREET SCENE ON TANGIER ISLAND. POPULATION OF APPROXIMATELY 1,100 SOLELY DEPENDENT ON SEAFOOD INDUSTRY

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COMMISSION OF FISHERIES

G. WALTER MAPP*, *Commissioner*.....Accomack, Va.
J. BROOKS MAPP, *Commissioner*.....Keller, Va.

ASSOCIATE MEMBERS

GEORGE W. LAYMAN.....New Castle, Va.
JUNIUS E. WEST.....Suffolk, Va.
CHARLES E. STUART.....Montross, Va.
GILBERT L. DIGGS.....Mathews, Va.

OFFICE

W. C. PARSONS, *Chief Clerk*.....Newport News, Va.
SHANN R. MORRIS, *Assistant Chief Clerk*.....Newport News, Va.
MARY SIMKINS TALIAFERRO, *Bookkeeping Machine Operator*.....Hampton, Va.
LENA E. SIMPSON, *Senior Account Stenographer*.....Newport News, Va.
ELIZABETH M. CORSON, *Junior Account Stenographer*..Newport News, Va.
JEWEL EVANS, *Secretary to Commissioner*.....Keller, Va.

ADMINISTRATION

FRED E. RUEDIGER, *Civil Engineer*.....Newport News, Va.
L. SELDEN TAYLOR, *Superintendent of Boats and Conservation*.....Norfolk, Va.
J. T. MEYER, *Superintendent of Hatcheries*.....Richmond, Va.
C. L. THOMPSON, *Field Supervisor of Conservation*...Cobbs Creek, Va.
REVELL MELSON, *General Educational Work*.....Accomack, Va.

B. DRUMMOND AYRES, *Attorney*.....Accomack, Va.

GENERAL OFFICE OF COMMISSION—NEWPORT NEWS, VA.

VIRGINIA FISHERIES LABORATORY
YORKTOWN, VIRGINIA

CURTIS L. NEWCOMBE, *Director*.....Yorktown, Va.
ROBERT WINSTON MENZEL, *Assistant Biologist*.....Yorktown, Va.

*Died February 2, 1941.

OYSTER INSPECTORS

Dist.	Counties	Name	Address
1	Westmoreland, King George, Prince William, Stafford, and Fairfax	R. H. Beale	Hague, Va.
2	Westmoreland and Northumberland	M. T. Dawson	Lodge, Va.
4	Northumberland	E. O. Corsa	Fleeton, Va.
5	Northumberland and Lancaster	W. N. Gresham	Kilmarnock, Va.
6	Lancaster	H. C. Doggett	Monaskon, Va.
7	Richmond, Essex, and Caroline	John Curlett	Bowlers Wharf, Va.
8	Gloucester	W. E. Shackelford	Severn, Va.
9	Gloucester, King and Queen, and King William	M. H. Hogg	Wicomico, Va.
10	Mathews	R. J. Brooks	Onemo, Va.
11	Mathews and Middlesex	C. L. Thompson	Cobbs Creek, Va.
12 & 14	Middlesex	R. L. Jones	Saluda, Va.
15 & 16	York, James City, and New Kent	L. M. Callis	Seaford, Va.
17	Elizabeth City	Joseph White	Hampton, Va.
18	Warwick and James City	Frank Garrow	Denbigh, Va.
19	Isle of Wight and Surry	P. T. Martin	Rescue, Va.
19-A	Chesterfield, Henrico, Prince George, Charles City, King William and New Kent	J. T. Meyer	Richmond, Va.
20	Nansemond	J. B. Bush	Eclipse, Va.
21 & 22	Norfolk and Princess Anne	A. E. Ewell	Norfolk, Va.
24	Accomack and Northampton	B. B. Fitchett*	Franktown, Va.
24	Accomack and Northampton	J. C. Bell	Nassawaddox, Va.
25	Northampton	John G. Mears	Willis Wharf, Va.
26	Accomack	J. C. Lewis	Saxis, Va.
28	Accomack	W. D. Steelman	Chincoteague, Va.
29	Accomack	A. C. Johnson	Wachapreague, Va.

DEPUTY OYSTER INSPECTORS

Dist.	Counties	Name	Address
1	Westmoreland, King George, Stafford, Prince William, and Fairfax	W. B. Marchant	Colonial Beach, Va.
6	Lancaster	W. S. James	Weems, Va.
24	Accomack and Northampton	Geo. C. Bonniwell	Harborton, Va.
25	Northampton	W. H. Crockett	Willis Wharf, Va.
28	Accomack	H. C. Ellis	Greenbackville, Va.
29	Accomack	Chas. D. Eichelberger	Quinby, Va.
	All counties	Edward T. Mears	Poulson, Va.

*Died May 6, 1941.

POLICE BOATS AND POLICE CAPTAINS

Name of Boat	Captain	Address
"Will F. Kellam"	W. C. Allen	Onancock, Va.
"Katie"	Julian F. Lewis	Cobbs Creek, Va.
"Agnes Hope"	H. A. Drummond	Hallwood, Va.
"Inquirer"	H. B. Miller	Colonial Beach, Va.
"Victor"	W. N. Gresham	Kilmarnock, Va.
"Charmian"	J. T. Anderton	Newport News, Va.
"Jane"	P. T. Martin	Rescue, Va.
"Cull Boy"	John Curlett	Bowlers Wharf, Va.
"Willissett"	A. C. Johnson	Wachapreague, Va.
"C. F. 12 Jane"	J. T. Meyer	Richmond, Va.

REPORT OF COMMISSIONER OF FISHERIES

COMMONWEALTH OF VIRGINIA,
OFFICE OF THE COMMISSION OF FISHERIES,
NEWPORT NEWS, VIRGINIA, *October* 18, 1941.

To His Excellency, HONORABLE JAMES H. PRICE,
Governor of Virginia
and
THE GENERAL ASSEMBLY OF VIRGINIA:

In accordance with statutory requirements, I beg to submit herewith the annual report of the Commission of Fisheries for the two fiscal years ending June 30, 1940, and June 30, 1941.

On the preceding pages will be found a roster of the present employees of the Commission.

There is filed in the Newport News Office of the Commission of Fisheries a detailed and exhaustive, comparative statement by W. C. Parsons, Chief Clerk of the Commission, covering all of the fiscal affairs of the Commission as shown by its records for the two fiscal years ending June 30, 1940, and June 30, 1941. The Commissioner and each member of the Commission have been furnished a copy of this statement. In the interest of economy, and because of the very considerable length of said detailed statement, same is not printed herewith, but is of course subject to inspection at any time.

There are filed herewith, numbered from 1 to 11, Tables, compiled by Shann R. Morris, Assistant Chief Clerk, giving the information shown in the headings of said tables for the fiscal years ending June 30, 1940, and June 30, 1941, as follows:

Table No. 1. Receipts from Fish and Oyster Industries by Districts.
Table No. 2. General Fund, Receipts and Disbursements.
Table No. 3. Repairs to Boats.
Table No. 4. Oyster Repletion Fund, Receipts and Expenditures.
Table No. 5. Recorded Planting Ground.
Table No. 6. Color and Age of Tonger Licensees.
Table No. 7. Number of Licenses.
Table No. 8. Kind, Number and Amount Collected from Fish Nets by Districts.
Table No. 9. Itemized Statement of Collection from all Sources.
Table No. 10. Comparative Statement by Years of Expenses from 1922 to 1941, Inclusive.
Table No. 11. Catch of Virginia Seafood Expressed in Pounds and Value for Years 1930 to 1939, Inclusive.

There are likewise filed, marked as hereinafter designated, the following reports:

Exhibit A. Report of J. T. Meyer, Superintendent of Hatcheries.
Exhibit B. Report of Dr. Curtis L. Newcombe, Director of Virginia Fisheries Laboratory.
Exhibit C. Report of Capt. L. Selden Taylor, Superintendent of Inspectors, Boats and Conservation.
Exhibit D. Report of Fred E. Ruediger, Engineer to Commission of Fisheries.

The above filed papers are self-explanatory. Same may be fairly and accurately summarized by stating that the financial affairs of the

Commission are in a very healthy and satisfactory condition. (See Tables 2 and 4 for detailed statements of accounts and balances in both Special and Repletion Funds.) In fact, so satisfactory was the Commission's financial position at the end of its last fiscal year on June 30, 1941, that the Commission both hoped and believed that it would be possible to recommend to the Legislature a decrease rather than an increase in the proposed Budget for the coming biennium.

Many factors have contributed to make this satisfactory condition possible. Among them is the assistance rendered by the Works Project Administration, in connection with the repletion work. We feel that it is only proper that we should especially thank W. B. Sours, Field Supervisor of the Norfolk District of said Administration, not only for the work done and money spent under his direction, but also for the whole-hearted cooperation given by him to the Commission.

As a result of better financial conditions, the Commission was able to, and did strictly enforce during the present year the law requiring the payment of all license charges before the beginning of work in any branch of the seafood business by the licensees. We believe this resulted in the collection of many licenses which would otherwise have been lost.

The Commission found it possible to do without the services of several former employees, without affecting the efficiency of the Commission's work.

The Commissioner desires, too, to state that without the splendid cooperation and assistance rendered by each and every member of the Commission; without the untiring and painstaking work done by each and every member of the office force and the Superintendents of the various departments, and without the very good work done by the Inspectors and Captains (most of whom are working for very small salaries), he does not feel that it would have been possible to have made the herein contained satisfactory report. The Commissioner, therefore, desires to give each and all of the above referred to employees due acknowledgment for the cooperation and assistance which has been rendered by them.

Below are some of the things that have been accomplished by the Commission during the past two years:

JURISDICTIONAL LINES BETWEEN THE COMMISSION OF GAME AND INLAND FISHERIES AND THE COMMISSION OF FISHERIES ESTABLISHED

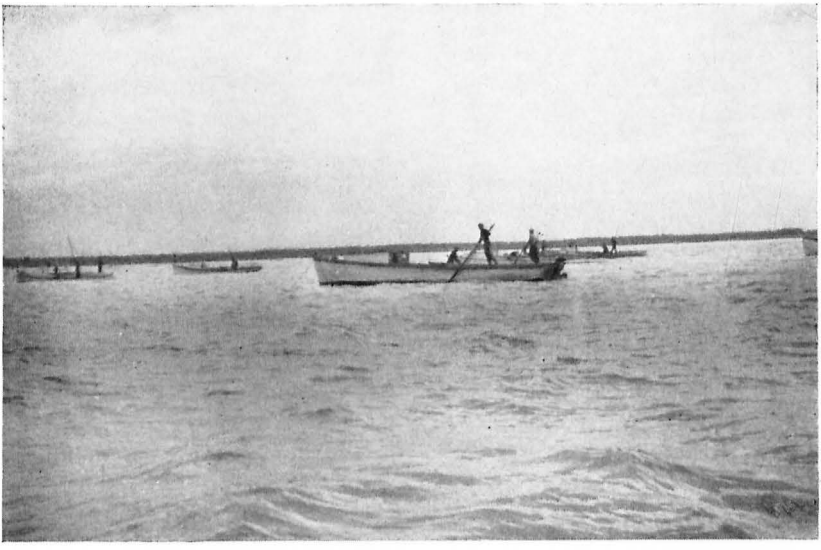
For many years, there have from time to time been various disputes and disagreements between the above two Commissions as to where the jurisdiction of each began and ended. The 1938 session of the Legislature gave the two Commissions authority to definitely and permanently establish these jurisdictional lines. Several meetings were held in an effort to reach an agreement, all of same, however, without success. This inability to agree resulted in much confusion in the disputed areas and in the institution of legal proceedings in at least one of said areas. In addition, as two of the State's most important agencies, both Commissions received perhaps just criticism for their inability to reach an agreement.

During the spring of 1941, after a personal inspection of the disputed areas, and several conferences between representatives of the two Commissions, a final written agreement, dated June 25, 1941, was executed by the two Commissions definitely fixing all jurisdictional lines. A duly executed copy of said agreements has been filed with the Attorney General of the State.

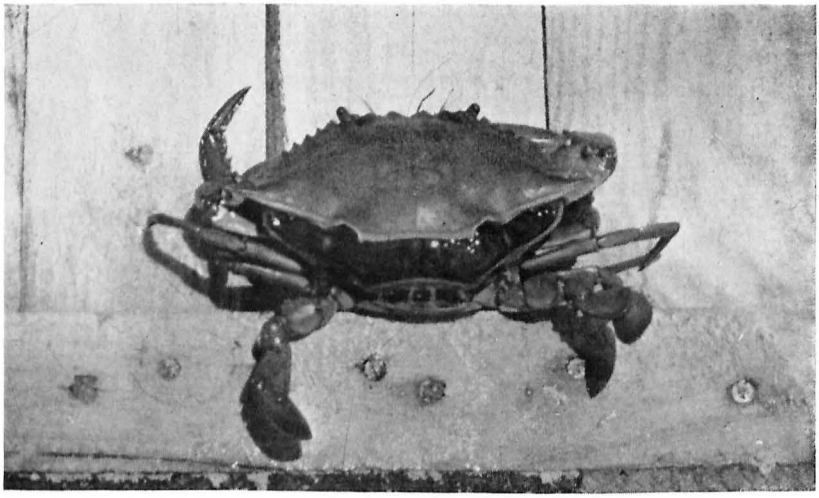
CRABS

There has been a gradual decline in the supply of crabs in the Chesapeake Bay during the past several years. This condition became so acute during the spring of 1941, that the price of soft crabs reached perhaps an

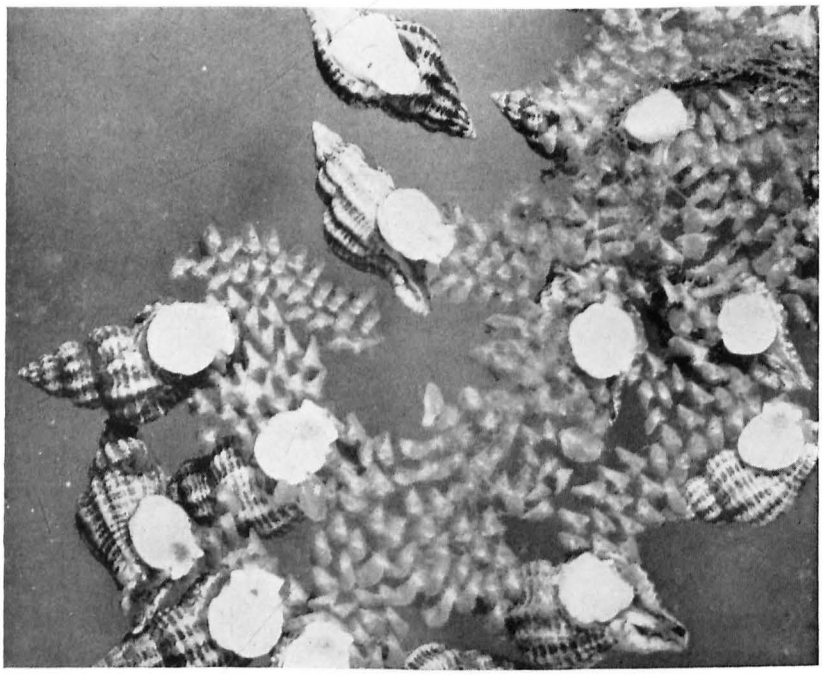
BUYING PEELER CRABS



OYSTER TONGING ON A STORMY DAY IN JAMES RIVER



CRAB SHEDDING ITS SHELL



SCREWBORERS AND THEIR EGG CAPSULES

all-time high. The Commissions of both Maryland and Virginia, along with those engaged in this industry in both States, realized that definite action had to be taken to preserve, and if possible, increase both the supply and value of this most important industry.

From the best information obtainable, from 75 to 85% of all of the reproducing sponge, or mother, crabs lay their eggs during the late spring and summer months within an area of approximately 400 square miles, in the extreme lower part of the Chesapeake Bay. Realizing that with the limited number of boats owned by the Commission it was impossible to patrol the million and one-half acres of tidal waters in Virginia, and realizing, too, that under present Virginia laws, it is possible to convict only those who are caught actually catching sponge crabs, the Commission decided to concentrate its patrol work in the lower part of the Bay, thereby protecting three-fourths of the sponge, or mother, crabs. Prior to 1936, the Virginia Statute prohibited both the catching, and having in possession, sponge crabs during certain months of the year. This law was amended by the 1936 Legislature by omitting that part of the Statute which prohibited the "having in possession" of sponge crabs. Since this amendment, it has been possible to convict in the Courts only those apprehended while actually catching sponge crabs. We both hope and believe that if this patrol work is continued during future years, very real progress will be made toward increasing the diminishing supply of crabs in the Chesapeake.

We wish to make due acknowledgment to all of those engaged in the crab industry for their splendid cooperation in this patrol work, and especially to some of the crab packers of Hampton, who made this practical suggestion to the Commission.

Other factors have and are contributing to the decline in the quantity of crabs, among them being new devices, especially the crab pot for the catching of crabs; the winter dredging of crabs, and the waste of same while being held in floats during the shedding season, the death rate in these floats frequently reaching 60 to 75 per cent.

The records in the Commission of Fisheries' Office show that the first licenses issued for the operation of crab pots were in the year 1938. During that and each succeeding year, approximately the following number have been licensed: 1938, 370; 1939, 94; 1940, 2,780; and 1941, 20,265.

The Commission will later make its recommendations to the Legislature of suggested laws relative to crab pots, winter dredging and the future handling of crabs in crab floats.

OYSTERS

During 1940, the Commission planted on the public rocks of the State 307,779 bushels of oyster shells. During the year 1941, the Commission planted 301,420½ bushels of oyster shells on said rocks. Reports from the various districts where these shells were planted show a very good catch of oysters on same, which catch will be later transplanted as seed oysters on some of the State's barren bottoms. (See report of Capt. L. Selden Taylor, Supt. of Conservation, Exhibit C.) In addition, during the present year of 1941, approximately 43,145 bushels of seed oysters were transplanted in various parts of the State. This work had not been completed on June 30th.

Perhaps the most destructive and dangerous pest confronting the oyster industry is what is known as the "Screwborer". This pest is rapidly increasing throughout all Tidewater, Virginia, and is extremely destructive to oysters, same having already caused the abandonment of several leases in the State. (See picture of screwborer, page 9.)

During the present year of 1941, the Commission, at a cost of approximately $700.00, conducted a most successful experiment in one Dis-

trict in the State, in combating this screwborer pest. Based upon results obtained in this experiment, and upon experiments conducted by the Virginia Fisheries Laboratory, the Commission hopes to be able to do much during the next few years not only in checking, but in eliminating same from Virginia waters.

FISH

As will be seen from the report of J. T. Meyer, Superintendent of Hatcheries (Exhibit A), a little over 5,000,000 shad were hatched and released in Virginia waters during the year 1940, and over 8,500,000 were hatched and released in Virginia waters during 1941. In addition, over 150,000 were placed in a nursery pond. As a result of innumerable experiments and tests conducted by the United States Fish and Wildlife Service, we think that it can now be stated, as a fact, that the survivors of these liberated small shad will return in the second or third year to the head waters of the rivers in which they were liberated, to spawn. The Commission of Fisheries is operating three of these hatcheries, same being on the Chickahominy, the Mattaponi and on the Pamunkey Rivers, respectively, and the United States Fish and Wildlife Service is operating a hatchery in Harrison Lake.

VIRGINIA FISHERIES LABORATORY

With this report is filed an exhaustive and most interesting report (Exhibit B), by Dr. Curtis L. Newcombe, Director of the Virginia Fisheries Laboratory, at Yorktown, Virginia. This Laboratory is sponsored by the Commission of Fisheries and the College of William and Mary, and in addition has received very material help and assistance from the United States Fish and Wildlife Service and the E. I. duPont de Nemours & Company.

The Commission feels that the work already done and results accomplished by the Virginia Fisheries Laboratory has been of great value to the seafood interests of Virginia. It believes, too, that its possibilities for the future are of inestimable value. At an open meeting of the oyster interests of Virginia held in the Commission's Office, during the early part of the present year, representatives of three of the largest and oldest oyster packing companies in the State spoke before the Commission relative to present conditions in the oyster industry, and gave their suggestions as to what should and should not be done to improve said industry. One of the very few points upon which these gentlemen agreed was that their many years in the business had taught them that they knew very little about oysters. Pests and diseases from time immemorial have appeared. Countless thousands of bushels of valuable oysters have died, and in most cases the cause or causes were never investigated, or if investigated, were not discovered. It is equally true that those engaged in the industry are unable to agree among themselves as to the best long range repletion program to be adopted by the State. It is equally true that conditions differ very greatly in different parts of the State, and a repletion plan that might succeed in one part of Tidewater, Virginia, might be an absolute failure and waste of money in another part.

By using the Virginia Fisheries Laboratory as a fact-finding institution and as a proving ground before trying out new and costly experiments, we believe that real and permanent progress can be obtained at a great saving, both to the State of Virginia and to the thousands of people who are dependent upon the various branches of the seafood industry for their livelihood.

We most heartily endorse the painstaking, splendid work that has been and is being done by this Laboratory.

"SIRENE"

The 1940 session of the Virginia Legislature directed the Commission of Fisheries to sell, with the approval of the Commission, the boat "Sirene". The Supreme Court of Appeals of the State later, in substance, affirmed the Legislature's enactment.

Pursuant to these orders, both the Commissioner and Commission have made every effort they reasonably could to dispose of said boat at a price at least approximating what they, from the best information obtainable, believe to be the boat's present real value.

Sealed bids were asked for after due and full advertisement of same. The highest sealed bid received was $4,000.00. Both the Commissioner and Commission, believing that the Legislature and Supreme Court of the State intended and expected them to use their best judgment and discretion, refused to accept said offer. Following the rejection of said offer, the Commissioner and Commission authorized a reputable ship broker to sell the boat "Sirene" for a minimum price of $12,000.00, offering him the usual ship brokerage of 7% for so doing. We want to add that the Commissioner and Commission thought and think that the "Sirene" is worth more than $12,000.00, especially under present conditions, but did this in an earnest effort to comply with the mandate of the Legislature and of the Supreme Court.

Since the rejection of the $4,000.00 bid above referred to, offers have been made for the "Sirene" of $5,000.00 and $6,500.00, respectively, which offers have likewise been refused for the reasons above given.

An effort has been made to interest the British Government in the purchase of this boat, and numerous efforts have been and are continuing to be made to interest private individuals and corporations. While none of these efforts have as yet been successful, we do believe that in the reasonably near future, it will be possible to sell the "Sirene" either at a substantial profit to the State of Virginia, or certainly at a price that will not occasion any loss to the State.

The Commissioner and Commission have been and are in the unfortunate position of feeling that they will be criticized unless they sell the boat at some price even though said price is far below its present value, and between the equally strong feeling that they will be justly criticized if they sacrifice what they believe is a very valuable State asset.

COOPERATION

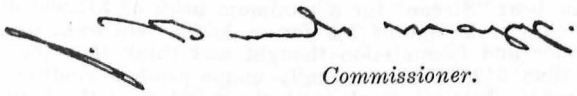
This report would not be complete without at least some reference to the splendid cooperation given the Commission of Fisheries of Virginia by the Conservation Department of the State of Maryland, of which Edwin Warfield, Jr., is Chairman, and by the Commission of Fisheries of North Carolina, of which Capt. John Nelson is Chairman—both in conservation work in the Chesapeake Bay and in law enforcement in said Bay. We believe that the three Commissions and those engaged in the seafood industry in all three States have gone a long way toward realizing that instead of criticizing one another, much more can be accomplished by working together.

We thank, too, the United States Fish and Wildlife Service, especially Dr. Herbert F. Prytherch, Director of the United States Fish and Wildlife Laboratory, at Beaufort, N. C. During 1940, Dr. Prytherch made a survey of the Rappahannock River oyster situation, which was authorized by the 1940 General Assembly, and for which $3,000.00 was appropriated out of the Oyster Repletion Fund. A final report has not yet been made, but several very helpful suggestions have been, and from time to time are being made by Dr. Prytherch, which we hope will result in the restoration of the Rappahannock River to the great oyster-producing area it once was.

In conclusion, we want to make public acknowledgment to those engaged in all branches of the seafood industry throughout Virginia for their fairmindedness and splendid cooperation. We believe that the vast majority of those engaged in this industry, from the largest packers to the individual whose only source of income is that eked out on the public rocks and in the public waters of the State, realize that the Commission and everyone connected therewith are at least making an honest effort to help them. This spirit of understanding and cooperation should, and we believe it will, make it possible for the seafood industry of Tidewater Virginia to resume its rightful place as one of the State's greatest assets.

At the coming session of the Legislature, it is the purpose of the Commission and Commissioner to present to the lawmakers of the State such suggestions as to them seem best to protect and promote the seafood industry.

Respectfully submitted,



Commissioner.

TABLE No. 1

Receipts from Fish and Oyster Industry by Districts

For Year Ending June 30, 1940

DISTRICTS	Ground Rents	Oyster Licenses	Tax at 1¼c from Public Rocks	Tax at 1¼c from Leased Grounds	Tax at 2c for Carrying Out of State	Crab Licenses	Clam and Scallop Licenses	Fish Licenses	Fees	Fines	Miscellaneous	Total
1	$ 478 79	$ 2,625 00	$ 1,916 98	$ 228 37	$ 6 60	$ 570 00	.....	$ 1,452 40	$ 194 00	$ 150 00	.....	$ 7,622 14
2	1,931 71	735 00	364 25	30 63	.....	406 50	.....	359 00	89 50	10 00	$ 2 50	3,929 09
4	1,619 91	202 00	636 35	212 74	.....	485 75	.....	6,303 00	25 50	.....	.....	9,485 25
5	564 84	349 50	.....	.....	.....	388 50	.....	1,365 00	32 00	.....	.....	2,699 84
6	2,410 50	1,360 50	1,661 58	.....	.....	466 00	.....	950 00	120 00	.....	.....	6,968 58
7	1,753 63	426 00	8 45	850 37	.....	20 50	.....	499 60	44 00	.....	2 50	3,605 05
8	3,471 84	129 50	.....	211 44	.....	276 50	$ 125 00	400 00	55 50	.....	215 25	4,885 03
9	2,620 75	521 00	180 35	453 91	32	77 50	26 00	123 00	71 50	.....	66 50	4,140 83
10	2,377 39	43 00	9 65	1,147 95	15 42	415 00	30 50	928 50	42 00	.....	81 00	5,090 41
11	1,616 07	410 00	47 56	191 46	.....	542 00	.....	718 00	57 00	.....	80 90	3,662 99
12 and 14	1,300 50	2,037 00	645 63	292 51	12 40	364 00	.....	301 50	139 00	.....	.....	5,092 54
15 and 16	5,235 68	323 50	61 79	99 31	.....	1,473 00	78 00	926 00	58 00	.....	43 50	8,298 78
17	4,002 97	110 50	.....	1,001 19	.....	688 00	42 50	657 50	25 00	.....	21 10	6,548 76
18	2,128 21	1,113 50	311 85	40 13	499 06	16 50	.....	326 63	338 50	20 00	.....	4,794 38
19	2,236 83	1,116 00	185 28	470 61	296 44	166 00	.....	345 83	283 50	95 00	14 50	5,209 99
19A	.....	22 00	.....	.....	.....	.....	.....	1,291 30	.....	.....	50	1,313 80
20	3,378 91	407 00	164 63	98 77	188 50	12 50	.....	47 50	65 50	10 00	34 90	4,408 21
21 and 22	6,481 65	296 50	.....	8,220 01	.....	146 50	2 50	576 50	21 50	.....	46 80	15,791 96
24	4,437 40	70 50	.....	513 99	.....	400 00	77 50	547 80	19 50	.....	.....	6,066 69
25	3,892 19	834 50	137 39	3,424 79	213 20	252 00	400 50	117 40	36 00	.....	.....	9,307 97
26	781 26	255 50	131 76	21 82	18 20	615 50	5 50	333 50	46 50	.....	.....	2,209 54
28	4,622 42	459 00	182 21	3,658 30	291 46	12 50	570 50	90 00	75 00	.....	6 00	9,967 39
29	3,011 91	875 00	556 58	1,125 96	90 62	86 50	71 00	78 50	11 50	.....	.....	5,907 57
Office	.....	.....	16 24	.....	.....	7 00	.....	.....	.....	75 00	6,335 60	6,433 84
J. T. Anderton*	.....	49 50	306 32	.....	490 14	13 00	11 00	.....	138 50	.....	.....	1,008 46
R. C. Harrison**	.....	54 00	182 49	.....	285 96	158 00	5 50	.....	331 50	90 00	.....	1,107 45
W. C. Allen†	.....	81 00	.....	.....	.....	895 50	.....	63 00	5 50	.....	.....	1,045 00
E. T. Drummond††	.....	157 50	.....	.....	.....	.....	.....	.....	12 50	.....	.....	170 00
Totals	$ 60,355 36	$ 15,064 00	$ 7,707 34	$ 22,294 26	$ 2,408 32	$8,954 75	$1,446 00	$ 18,801 46	$2,338 50	$ ‡450 00	$ 6,951 55	$146,771 54

*Captain of Police Boat "Charmian".
**Captain of Police Boat "Agnes Hope".
†Captain of Police Boat "Will F. Kellam".
††Boat harbor.
‡Fines to Literary Fund.

TABLE No. 1—Continued

Receipts from Fish and Oyster Industry by Districts

For Year Ending June 30, 1941

DISTRICTS	Ground Rents	Oyster Licenses	Tax at 1c from Public Rocks	Tax at 1c from Leased Grounds	Tax at 2c for Carrying Out of State	Crab Licenses	Clam and Scallop Licenses	Fish Licenses	Fees	Fines	Miscellaneous	Total
1	$ 503 61	$ 1,418 50	$ 2,228 33	$ 202 85	$ 6 88	$ 711 50	.....	$ 1,324 40	$ 125 00	$ 445 00	.....	$ 6,966 07
2	2,125 79	633 50	.....	.....	.....	853 00	.....	635 20	87 50	10 00	.....	4,344 99
4	1,689 87	364 00	381 25	458 51	9 30	799 00	.....	6,680 50	50 50	.....	.....	10,432 93
5	588 78	350 00	3 69	2 78	.....	407 00	.....	2,263 50	37 50	.....	.....	3,653 25
6	2,259 38	1,147 00	1,827 46	17 57	.....	745 00	.....	2,191 50	108 50	.....	.....	8,296 41
7	1,744 03	289 50	12 88	566 02	.....	81 50	.....	408 90	30 00	.....	.....	3,132 83
8	3,450 58	28 50	7 81	20 60	.....	219 50	$ 39 50	332 00	27 00	.....	$ 150 53	4,276 02
9	2,866 22	481 00	212 76	389 06	1 00	89 00	16 00	100 00	82 50	.....	92 25	4,329 79
10	2,448 17	132 00	.....	892 49	.....	632 50	20 50	1,046 00	25 00	10 00	49 50	5,256 16
11	1,782 77	878 00	204 97	97 35	40 68	799 50	.....	626 00	115 50	.....	100 75	4,645 52
12 and 14	1,240 76	1,476 00	609 12	186 65	11 40	536 00	.....	327 50	128 00	80 00	.....	4,595 43
15 and 16	5,346 58	177 50	7 21	21 26	.....	1,049 00	51 50	702 50	38 00	.....	64 00	7,457 55
17	4,177 89	46 50	.....	1,007 39	.....	834 50	53 50	595 50	29 00	.....	45 50	6,789 78
18	1,910 14	794 50	76 01	59 24	135 00	4 00	.....	462 30	372 50	20 00	2 00	3,835 69
19	1,959 60	764 50	89 13	330 28	63 00	118 50	.....	485 20	403 50	20 00	.....	4,233 71
19A	.....	20 00	.....	.....	.....	.....	.....	1,390 60	.....	.....	1 00	1,411 60
20	3,235 65	315 00	331 78	38 60	70 70	10 50	.....	77 00	50 50	70 00	.....	4,199 73
21 and 22	6,553 31	261 50	.....	7,020 10	.....	456 00	5 00	533 00	15 50	.....	87 50	14,931 91
24	4,434 47	59 00	.....	243 65	.....	504 50	49 50	426 50	13 00	.....	.....	5,730 62
25	4,035 84	829 50	75	1,520 94	1 50	455 00	182 50	144 50	27 50	.....	.....	7,198 03
26	847 49	376 00	107 05	58 63	57 84	278 00	.....	308 70	66 50	10 00	.....	2,110 21
28	4,944 78	299 50	82 81	2,746 75	165 62	267 50	263 50	66 00	74 00	.....	.....	8,910 46
29	2,381 12	531 00	23 91	688 56	15 44	321 00	43 00	80 00	26 00	.....	.....	4,110 03
J. T. Anderton*	.....	133 00	607 51	.....	792 00	44 50	10 50	.....	212 50	30 00	.....	1,830 01
Julian F. Lewis†	.....	3 50	47 15	41	36 00	316 00	.....	152 50	90 00	.....	.....	645 56
W. C. Allen‡	.....	339 50	14 00	.....	28 00	1,500 50	.....	175 00	45 00	145 00	.....	2,247 00
Office	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8,408 38	8,408 38
Totals	$ 60,526 83	$ 12,148 50	$ 6,875 58	$ 16,569 69	$ 1,434 36	$12,033 00	$ 735 00	$ 21,534 80	$2,280 50	$ ††840 00	$ 9,001 41	$143,979 67

*Captain of Police Boat "Charmian".
†Captain of Police Boat "Katie".
‡Captain of Police Boat "Will F. Kellam".
††Fines to Literary Fund.

TABLE No. 2

General Fund

Receipts and Expenditures

	Year Ending June 30, 1940		Year Ending June 30, 1941	
Amount to the credit of the General Fund at the beginning of the year		0		$ 991 57
Receipts:				
Ground rents	$ 60,355 36		$ 60,526 83	
Oyster tonger's licenses	7,595 50		4,929 50	
Other oyster licenses	1,283 50		1,323 00	
20% oyster tax from public rocks	1,542 47		1,275 11	
20% oyster tax from leased grounds	4,458 85		3,313 93	
Tax on oysters carried out of State	2,408 32		1,434 36	
Crabbing licenses	8,954 75		12,033 00	
Clam and scallop licenses	1,446 00		735 00	
Food fish licenses	11,613 46		11,603 80	
Menhaden fish licenses	7,188 00		9,931 00	
Fees and permits	2,338 50		2,280 50	
Rent of "Commodore Maury"	3,136 33		4,168 67	
Insurance from "Richard Armstrong"	2,000 00		0	
Sale of "Marguerite"	1,000 00		0	
Sale of "Commodore Maury"	0		4,025 00	
Miscellaneous	715 22		807 74	
		$ 116,036 26		$ 118,387 44
Amount transferred from Repletion Fund		7,500 00		0
Amount transferred from Rappahannock River Fund		0		1,525 43
Total receipts		$ 123,536 26		$ 120,904 44
Expenditures—Administration:				
Salaries:				
Commissioner	$ 5,500 00		$ 4,749 93	
Other members of Commission	660 00		750 00	
Clerks and stenographers	7,838 20		8,009 84	
Wages, extra office help and janitor work	90 00		21 30	
Counsel and expert service	1,783 50		1,628 05	
General repairs	99 75		129 90	
Motor vehicle repairs	93 88		69 23	
Light, heat, power and water	77 23		106 00	
Traveling	1,447 15		1,273 93	
Transportation (freight and express)	6 70		4 75	
Communication (telephone, telegraph and postage)	895 67		839 87	
Printing	179 47		102 89	
Other expense	97 75		122 38	
Office supplies	228 99		243 56	
Laundry, cleaning and disinfecting supplies	29		0	
Motor vehicle supplies	105 11		108 88	
Office equipment	211 50		139 79	
Rent	1,180 00		1,093 00	
Insurance	191 58		109 91	
		$ 20,686 77		$ 19,503 21
Expenditures—Inspection and Policing:				
Salaries:				
Boat crews	$ 23,121 04		$ 16,681 66	
Inspectors and special police	31,722 00		34,079 33	
Civil engineer	2,500 08		2,500 08	
Wages	5,736 42		7,258 33	
Counsel and expert service	0		277 25	
General repairs	17 93		11 68	
Motor vehicle repairs, including boats	4,951 70		5,884 26	
Light, heat, power and water	0		0	
Traveling	6,994 38		7,099 18	
Transportation (freight and express)	91 58		53 12	
Communication (telephone, telegraph and postage)	500 83		355 67	
Printing (including license tags)	1,223 82		1,159 58	
Other expense	782 74		522 28	
Food supplies	1,769 37		1,742 63	
Fuel supplies	362 12		339 18	
Office supplies	1 80		7 71	
Medical and laboratory supplies	4 95		1 53	
Laundry, cleaning and disinfecting supplies	98 99		52 86	
Refrigerating supplies	239 66		162 35	
Motor vehicle supplies	6,599 03		5,422 14	
Wearing apparel	34 75		2 84	
Other supplies	80 97		114 85	
Building materials	123 03		85 13	

TABLE No. 2—CONTINUED

	Year Ending June 30, 1940		Year Eunding June 30, 1941	
Expenditures—Inspection and Policing—Continued				
Other material	$ 57 24		$ 0	
Household equipment	137 78		81 19	
Medical and laboratory equipment	5 25		0	
Motor vehicle equipment	930 52		559 80	
Other equipment	57 89		0	
Rent	660 37		1,331 08	
Insurance	2,013 18		2,557 69	
Other charges and operations	4 72		0	
		$ 90,824 14		$ 88,343 40
Amount transferred to Repletion Fund		1,033 78		7,500 00
Repayment to State for loan		10,000 00		0
Transfer to Fund 846-01-02		0		1,500 00
Total expenditures		$ 122,544 69		$ 116,846 61
Balance in General Fund		$ 991 57		$ 4,057 83

TABLE No. 3

REPAIRS TO BOATS

For Years Ending June 30, 1940, and June 30, 1941

	1940	1941
Agnes Hope	$ 288 72	$ 642 03
Anne	6 80	.....
Charmian	153 71	168 60
Commodore Maury	1,274 80	1,415 63
Cull Boy	109 10	93 71
Foam	9 00	.....
Inquirer	82 06	104 07
Katie	546 70	1,154 38
Jane	189 52	154 48
Marguerite	305 19	.....
Richard Armstrong	15 81	.....
Victor	57 10	117 91
Willissett	152 74	118 10
Will F. Kellam	387 63	1,663 87
Sirene	1,311 30	9 60
Louise	.....	60 00
C. F. 12	.....	4 23
U. S. Fisheries	.....	51 35
Totals	$ 4,890 18	$ 5,757 96

TABLE No. 4

Oyster Repletion Fund

Receipts and Expenditures, Years Ending June 30, 1940 and 1941

	1940	1941
RECEIPTS		
Amount to credit of Repletion Fund at beginning of year	$ 8,154 17	$ 18,412 42
Receipts for:		
Tonging licenses—Ordinary and patent	6,185 00	5,896 00
Tax on oysters from public rocks	6,164 87	5,600 47
Tax on oysters from leased ground	17,835 41	13,255 76
Donation from Gloucester county	100 00	0
Transfer from Special Revenue Fund	1,033 78	7,500 00
Total receipts	$ 39,473 23	$ 50,664 65
EXPENDITURES		
Wages, tallying and planting shells	$ 492 18	$ 1,817 67
Special payments	1 00	0
General repairs	15 00	0
Motor vehicle repairs	89 46	63 70
Traveling	720 88	472 70
Transportation	659 32	9 00
Communication	42 55	20 01
Printing	7 03	6 51
Other expense (purchase of shells)	7,814 45	6,354 23
Motor vehicle supplies	47 10	68 15
Other supplies	2 00	1 20
Building materials	103 39	5 09
Office equipment	0	64 20
Household equipment	3 65	0
Other equipment	36 23	0
Other equipment (capital outlay)	10 00	0
Rent	516 57	1,671 89
Total expenditures	$ 10,560 81	$ 10,554 35
Transfer to Special Revenue Fund	7,500 00	0
Appropriation for Rappahannock River investigation	3,000 00	0
Total	$ 21,060 81	$ 10,554 35
Balance in Oyster Repletion Fund	$ 18,412 42	$ 40,110 30

TABLE No. 5

Recorded Planting Ground

Year Ending June 30, 1940, and June 30, 1941

DISTRICTS	1940 Number of Acres	1941 Number of Acres
1	480.06	495.71
2	2,017.50	2,021.00
4	1,657.49	1,643.59
5	549.06	578.07
6	2,389.73	2,377.47
7	1,731.49	1,724.58
8	5,281.03	5,572.54
9	2,534.31	2,633.70
10	3,132.86	3,162.81
11	1,591.42	1,772.13
12	171.11	166.83
14	1,051.68	1,058.35
15	4,063.01	4,062.28
16	2,690.43	2,679.54
17	4,002.65	3,963.21
18	1,974.68	1,829.09
19	2,136.54	2,016.99
20	3,404.79	3,352.88
21	6,439.74	7,198.85
22	2,330.00	2,244.63
24	4,361.41	4,374.11
25	3,707.63	3,910.73
26	830.22	831.69
28	4,487.94	5,061.28
29	2,967.01	2,877.11
Total	65,983.79	67,609.17

TABLE No. 6

Table of Color and Age of Tongers Who Procured a License to Tong Oysters, Clams and Scallops

For Year Ending June 30, 1940

	Ages in Years										
	20 or under	21 to 25	26 to 30	31 to 35	36 to 40	41 to 45	46 to 50	51 to 55	56 to 60	Over 60	Total
White	155	211	237	239	203	180	213	236	157	217	2,048
Colored	53	103	112	76	114	107	131	119	118	142	1,075
Totals	208	314	349	315	317	287	344	355	275	359	3,123

TABLE No. 6—Continued

Table of Color and Age of Tongers Who Procured a License to Tong Oysters, Clams, and Scallops

For Year Ending June 30, 1941

	Ages in Years										
	20 or under	21 to 25	26 to 30	31 to 35	36 to 40	41 to 45	46 to 50	51 to 55	56 to 60	Over 60	Total
White	150	190	208	204	194	181	191	200	175	199	1,892
Colored	45	65	102	70	91	99	130	116	117	148	983
Totals	195	255	310	274	285	280	321	316	292	347	2,875

TABLE No. 7

Number of Licenses

Years Ending June 30, 1940, and June 30, 1941

	1940	1941
Patent oyster tongers	181	190
Ordinary oyster tongers	2,640	2,523
Oyster barrel shippers	18	11
Oyster shucking houses	146	130
Oyster dredging	0	1
Crab trot lines and nets	1,100	1,495
Crab dredging	177	155
Crab picking and crating houses	83	99
Crab buyers	121	158
Miscellaneous crab devices	592	1,111
Patent clam and scallop tongers	13	3
Ordinary clam and scallop tongers	289	159
Clam and scallop buyers	41	22
Food fish nets	3,558	3,637
Menhaden	39	55
Fish and roe packers	20	18
Totals	9,018	9,767
Amount collected	$ 44,266 21	$ 46,451 30

TABLE No. 8

Kind, Number and Amount Collected from Fish Nets by Districts

Year Ending June 30, 1940

DISTRICTS	Pound		Float		Gill		Fyke		Haul Seine		Miscellaneous Fishing Device		Menhaden		Fish and Roe Packing		Totals
	No. Lic.	Amount Received	No. Lic.	Amount Received	No. Lic.	Amount Received	No. Lic.	Amount Received	No. Lic.	Amount Received	No. Lic.	Amount Received	No. Lic.	Amount Received	No. Lic.	Amount Received	
1	81	$ 283 50			128	$ 298 90	341	$ 511 50	33	$ 241 50	25	$ 109 00			1	$ 8 00	$ 1,452 40
2	98	343 00													2	16 00	359 00
4	112	392 00											31	$5,823 00	11	88 00	6,303 00
5	170	595 00			1	2 00	8	12 00	10	50 00			4	674 00	4	32 00	1,365 00
6	62	217 00			1	2 00	6	9 00	3	15 00			4	691 00	2	16 00	950 00
7	50	175 00	8	$ 16 00	85	171 10	52	78 00	11	55 00	3	4 50					499 60
8	110	385 00							3	15 00							400 00
9	1	3 50	4	8 00	33	66 00	27	40 50	1	5 00							123 00
10	193	675 50			3	6 00	2	3 00	8	244 00							928 50
11	147	511 00			3	6 00	2	3 00	9	198 00							718 00
12 and 14	18	57 50							8	244 00							301 50
15 and 16	112	392 00			46	92 00	21	31 50	11	335 50	3	75 00					926 00
17	95	332 50									13	325 00					657 50
18	21	73 50			49	163 63	39	58 50	3	15 00	4	16 00					326 63
19	7	24 50			62	205 83	67	100 50	2	10 00	2	5 00					345 83
19A			370	741 00	22	70 80	54	81 00	27	135 00	218	263 50					1,291 30
20	7	24 50			7	14 00	6	9 00									47 50
21 and 22	98	343 00			25	50 00	8	12 00	18	166 50	2	5 00					576 50
24	123	430 50			18	56 80			7	60 50							547 80
25	28	98 00			3	14 40			1	5 00							117 40
26	20	70 00			5	11 50	2	3 00	9	249 00							333 50
28	20	70 00							4	20 00							90 00
29	11	38 50							8	40 00							78 50
*W. C. Allen	18	63 00															63 00
Totals	1,602	$5,598 00	382	$ 765 00	491	$1,230 96	635	$ 952 50	176	$2,104 00	270	$ 803 00	39	$7,188 00	20	$ 160 00	$18,801 46

*Captain Police Boat "Will F. Kellam".

TABLE No. 8—Continued

Kind, Number and Amount Collected from Fish Nets by Districts

Year Ending June 30, 1941

DISTRICTS	Pound		Float		Gill		Fyke		Haul Seine		Miscellaneous Fishing Device		Menhaden		Fish and Roe Packing		Totals
	No. Lic.	Amount Received	No. Lic.	Amount Received	No. Lic.	Amount Received	No. Lic.	Amount Received	No. Lic.	Amount Received	No. Lic.	Amount Received	No. Lic.	Amount Received	No. Lic.	Amount Received	
1	96	$ 336 00			92	$ 212.70	291	$ 436 50	30	$ 226.50	24	$ 112 70					$ 1,324 40
2	162	567 00					2	3 00	3	15 00	1	2 20			6	$ 48 00	635 20
4	102	357 00			4	10 00			1	30 50			34	$6,235 00	6	48 00	6,680 50
5	143	500 50			2	4 00			1	5 00			10	1,714 00	5	40 00	2,263 50
6	59	206 50					2	3 00					11	1,982 00			2,191 50
7	44	154 00	7	$ 14 00	63	126 40	42	63 00	10	50 00	1	1 50					408 90
8	94	329 00					2	3 00									332 00
9	3	10 50	3	6 00	27	54 00	13	19 50	2	10 00							100 00
10	264	924 00							4	122 00							1,046 00
11	151	528 50			3	6 00			3	91 50							626 00
12 and 14	14	49 00			2	4 00			9	274 50							327 50
15 and 16	97	339 50			38	76 00	28	42 00	6	157 50	4	79 50			1	8 00	702 50
17	91	318 50			1	2 00					11	275 00					595 50
18	40	140 00			49	174 30	46	69 00	2	35 50	10	43 50					462 30
19	20	70 00			72	255 70	98	147 00	2	10 00	1	2 50					485 20
19A			363	726 00	25	70 30	60	90 00	27	135 00	305	369 30					1,390 60
20	3	10 50			10	20 00	31	46 50									77 00
21 and 22	89	311 50			23	46 00	5	7 50	12	162 00	1	6 00					533 00
24	98	343 00			14	28 00	7	10 50	9	45 00							426 50
25	27	94 50			9	45 00			1	5 00							144 50
26	22	77 00			3	8 20			9	223 50							308 70
28	16	56 00							2	10 00							66 00
29	10	35 00							9	45 00							80 00
Julian F. Lewis*									5	152 50							152 50
W. C. Allen†	50	175 00															175 00
Totals	1,695	$5,932 50	373	$ 746 00	437	$11,422 60	627	$ 940 50	147	$1,806 00	358	$ 892 20	55	$9,931 00	18	$ 144 00	$21,534 80

*Captain Police Boat "Katie".
†Captain Police Boat "Will F. Kellam".

TABLE No. 9

Itemized Statement of Collections from All Sources

For the Year Ending June 30

	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941
Rent										
Planting ground at 25c per acre	$ 1,375 38	$ 1,929 13	$ 1,987 16	$ 2,131 33	$ 2,054 63	$ 2,587 37	$ 2,019 45	$ 2,255 85	$ 2,631 63	$ 2,856 61
Planting ground at $1.00 per acre	51,224 76	48,731 90	52,718 42	58,498 64	59,756 65	60,171 96	55,079 42	55,429 46	56,597 90	56,635 36
Bathing ground at $5.00 per acre	850 03	493 92	399 15	798 00	648 50	928 19	422 65	462 83	475 25	445 25
Assignment fees	322 00	198 50	205 00	274 50	226 00	244 35	276 00	310 00	329 00	308 50
5% penalty	670 57	711 86	1,048 12	1,101 35	1,052 80	948 38	601 08	674 14	650 58	589 61
Total rents	$ 54,442 74	$ 52,065 31	$ 56,357 85	$ 62,803 82	$ 63,738 58	$ 64,880 25	$ 58,398 60	$ 59,132 28	$ 60,684 36	$ 60,835 33
Oysters										
Tongers' licenses—Patent	$ 4,790 00	$ 3,240 00	$ 1,455 00	$ 1,440 00	$ 1,800 00	$ 514 50	$ 409 50	$ 798 00	$ 1,900 50	$ 1,995 00
Tongers' licenses—Ordinary	14,436 00	12,048 00	6,776 00	14,278 00	13,828 00	14,679 00	14,463 00	12,811 50	11,880 00	8,830 50
Barrel shippers' licenses	69 00	92 00	51 00	48 00	67 00	63 50	82 00	49 00	89 00	63 50
Shucking house licenses	724 50	631 50	945 75	990 50	1,131 50	1,156 50	904 00	1,212 50	1,194 50	1,221 50
Dredging licenses	83 00	37 00								38 00
Tax from public rocks	10,479 64	8,665 67	12,384 14	8,393 58	5,818 93	4,635 66	5,470 66	7,358 87	7,707 34	6,875 58
Tax from leased grounds	19,169 38	18,998 00	31,331 73	29,844 26	26,626 56	15,828 19	18,130 35	20,543 59	22,294 26	16,569 69
Inspection tax										
Carried out of State tax	6,183 33	2,333 30	3,305 79	2,736 45	1,437 12	942 23	1,086 01	1,520 80	2,408 32	1,434 36
Fees for issuing licenses	2,105 50	1,729 00	990 25	1,934 75	1,917 00					
Fees for registering boats	1,356 00	1,094 50	704 00	1,133 50	1,093 00	970 50	983 50	944 50	879 50	857 00
Fees for issuing permits	1,071 00	799 00	1,277 50	1,470 50	1,446 50	1,260 50	1,266 50	1,122 50	1,130 00	1,115 00
Total oysters	$ 60,467 35	$ 49,667 97	$ 59,221 16	$ 62,269 54	$ 55,165 61	$ 40,050 58	$ 42,795 52	$ 46,361 26	$ 49,483 42	$ 39,000 13
Crabs										
Ordinary trot lines	$ 2,052 00	$ 2,134 00	$ 1,984 00	$ 3,376 00	$ 3,028 30	$ 4,677 50	$ 4,540 00	$ 4,037 50	$ 2,680 00	$ 3,542 50
Patent trot lines	690 00	505 00	360 00	730 00	440 00	913 50	714 00	787 50	294 00	819 00
Scrape or dredge with boat	1,475 00	1,376 00	2,095 00	2,590 00	2,200 00	2,784 00	2,893 50	2,586 50	3,228 50	2,290 50
Picking or crating licenses	400 00	380 00	650 00	670 00	610 00	935 00	957 00	726 00	913 00	1,089 00
Canning or packing licenses	50 00	50 00	25 00		25 00	26 00	26 00			
Buying and shipping licenses	530 00	500 00	525 00	590 00	720 00	720 50	660 00	632 50	665 50	869 00
Fees for issuing licenses	709 50	714 25	741 25	1,134 75	1,008 50					
Miscellaneous devices						128 10	214 15	672 25	1,173 75	3,423 00
Total crabs	$ 5,906 50	$ 5,659 25	$ 6,380 25	$ 9,090 75	$ 8,031 80	$ 10,184 60	$ 10,004 65	$ 9,442 25	$ 8,954 75	$ 12,033 00

CLAMS										
Tongers' license—Patent	$ 25 00	$ 10 00	$ 35 00	$ 35 00	$ 65 00	$ 341 00	$ 187 00	$ 297 00	$ 71 50	$ 16 50
Tongers' license—Ordinary	1,176 00	426 00	274 00	424 00	508 00	720 00	512 50	817 50	722 50	397 50
Buyers' and shippers' licenses	934 00	690 00	536 00	697 00	650 00	630 00	395 50	514 00	652 00	321 00
Fees for issuing licenses	350 00	132 00	91 25	133 00	155 00	.....	.....	.....	.....	.....
Total clams	$ 2,485 00	$ 1,258 00	$ 936 25	$ 1,289 00	$ 1,378 00	$ 1,691 00	$ 1,095 00	$ 1,628 50	$ 1,446 00	$ 735 00
FISH										
Pound nets	.....	.....	$ 6,830 50	$ 6,375 00	$ 6,244 00	$ 7,773 50	$ 7,210 00	$ 6,955 00	$ 5,598 00	$ 5,932 50
Float nets	.....	.....	587 00	577 12	501 00	654 00	612 00	794 00	765 00	746 00
Gill nets	.....	.....	865 01	1,089 20	955 40	1,299 15	1,042 90	1,006 42	1,230 96	1,142 60
Fyke nets	.....	.....	441 50	753 50	686 00	1,390 50	1,377 00	1,369 50	952 50	940 50
Haul seine nets	.....	.....	901 50	1,155 50	1,003 50	1,828 50	2,015 00	1,829 50	2,104 00	1,806 00
Menhaden nets	$ 1,650 00	$ 3,750 00	5,250 00	3,200 00	3,400 00	8,575 00	4,399 00	6,187 00	7,188 00	9,931 00
Herring and roe houses	122 50	127 50	90 00	112 50	150 00	168 00	104 00	104 00	160 00	144 00
Fees for issuing licenses	2,154 50	1,666 00	1,678 00	2,037 00	1,912 00	.....	.....	.....	.....	.....
Miscellaneous fish licenses	.....	.....	210 25	167 85	139 00	815 40	665 00	328 30	803 00	892 20
Total fish	$ 18,156 98	$ 16,561 53	$ 16,853 76	$ 15,467 67	$ 14,990 90	$ 22,504 05	$ 17,424 90	$ 18,573 72	$ 18,801 46	$ 21,534 80
Miscellaneous	$ 4 00	$ 9 90	$ 2,705 35	$ 749 15	$ 268 90	$ 1,223 20	$ 4,327 68	$ 4,347 56	$ 6,951 55	$ 9,001 41
Fines	135 00	.....	65 00	125 00	385 00	960 00	658 50	200 00	450 00	840 00
Total collected for year	$141,597 57	$125,221 96	$142,519 62	$151,794 93	$143,958 79	$141,493 68	$134,704 85	$139,685 57	$146,771 54	$143,979 67

NOTE.—In certain cases the detail of the collections of the various classifications was not available.

TABLE No. 10

Comparative Statement by Years of Expenses

From 1922 to 1941, inclusive

	Office and Administration	Field Inspection	Total Expenses
Expenses, Oct. 1, 1921, to Sept. 30, 1922	$ 16,148 85	$ 44,093 09	$ 60,241 94
Expenses, Oct. 1, 1922, to Sept. 30, 1923	16,293 61	60,596 21	77,249 82
Expenses, Oct. 1, 1923, to June 30, 1924*	14,610 30	43,493 62	58,103 92
Expenses, July 1, 1924, to June 30, 1925	21,045 74	48,539 17	69,584 91
Expenses, July 1, 1925, to June 30, 1926	17,227 05	48,341 31	65,568 36
Expenses, July 1, 1926, to June 30, 1927	15,988 91	48,543 97	64,532 88
Expenses, July 1, 1927, to June 30, 1928	18,625 58	57,708 20	76,333 78
Expenses, July 1, 1928, to June 30, 1929	16,304 02	55,982 12	72,286 14
Expenses, July 1, 1929, to June 30, 1930	16,990 69	52,572 33	69,563 02
Expenses, July 1, 1930, to June 30, 1931	**23,382 50	90,242 06	113,624 56
Expenses, July 1, 1931, to June 30, 1932	†21,057 67	86,300 06	107,357 73
Expenses, July 1, 1932, to June 30, 1933	21,114 27	79,100 03	100,214 30
Expenses, July 1, 1933, to June 30, 1934	††17,565 07	68,227 49	85,792 56
Expenses, July 1, 1934, to June 30, 1935	‡29,247 96	86,636 60	115,884 56
Expenses, July 1, 1935, to June 30, 1936	22,733 34	‡‡96,572 91	119,306 25
Expenses, July 1, 1936, to June 30, 1937	20,120 38	91,345 77	111,466 15
Expenses, July 1, 1937, to June 30, 1938	21,107 13	97,059 01	118,166 14
Expenses, July 1, 1938, to June 30, 1939	18,898 62	§103,528 15	122,426 77
Expenses, July 1, 1939, to June 30, 1940§§	§§20,686 77	90,824 14	111,510 91
Expenses, July 1, 1940, to June 30, 1941	19,503 21	88,343 40	107,846 61

*This period covers nine months only.
**The salary of the Commissioner was $7,500.00 during this period.
†The salary of the Commissioner was $7,500.00 per annum during five months of this period.
††At this period there was a 30% cut in salaries in effect.
‡Vault constructed and bookkeeping machine purchased during this period.
‡‡New boat built this year.
§New boat purchased this year.
§§The salary of the Commissioner was reduced from $5,500.00 to $5,000.00 per annum.

TABLE No. 11

Virginia Catch Expressed in Pounds and Value

	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Oysters:										
Pounds	27,664,797	23,561,001	15,005 270	13,467 772	21,868 800	15,121,800	15,229,300	10,986,000	14,049,300	16,504,300
Value	$2,688,033	$1,542,513	$1,083,592	$ 935,785	$1,399,818	$1,000,738	$1,258,087	$ 781,150	$1,171,510	$1,335,972
Crabs:										
Pounds	31,820,870	30,676,700	28,458,106	19,424,762	23,884,200	21,211,900	26,297,600	30,402,800	31,473,000	29,750,100
Value	$ 738,061	$ 491,204	$ 281,768	$ 315,939	$ 560,012	$ 518,221	$ 591,992	$ 789,967	$ 697,277	$ 659,659
Clams:										
Pounds	1,212,736	741,528	1,484,464	1,169,296	2,609,100	1,643,900	2,751,800	1,631,100	2,812,500	2,024,700
Value	$ 391,771	$ 252,929	$ 347,647	$ 375,531	$ 328,370	$ 370,647	$ 317,023	$ 270,782	$ 376,048	$ 337,802
Fish:										
Pounds	65,287,869	59,040,070	57,954,619	60,976,123	55,381,800	61,212,200	51,002,200	77,153,500	93,688,100	213,655,600
Value	$2,841,047	$1,993,026	$1,433,459	$1,303,635	$1,254,067	$1,100,472	$ 797,630	$1,497,945	$1,791,352	$2,266,623

EXHIBIT A

Richmond, Virginia, June 17, 1940.

HON. G. WALTER MAPP, *Commissioner,*
Commission of Fisheries of Virginia,
Newport News, Virginia.

DEAR MR. MAPP:

I submit herewith my report covering the shad hatching work on the Chickahominy, Mattaponi and Pamunkey Rivers for the 1940 season as follows:

The Chickahominy River Hatchery was in operation from April 29th to May 31st inclusive, during which time one hundred and twenty-one (121) spawning roe shad were caught and stripped, from which we received a total of 3,019,000 eggs.

The Mattaponi River Hatchery was in operation from May 1st to May 31st inclusive, during which time fifty (50) spawning roe shad were caught and stripped, from which we received a total of 1,051,995 eggs.

The Pamunkey River Hatchery was in operation from May 1st to May 31st inclusive, during which time twenty-five (25) spawning roe shad were caught and stripped, from which we received a total of 643,000 eggs.

From the above total of 4,713,995 eggs we received a hatch of about 85 or 90 per cent of young shad, all of which were released in the river immediately after hatching.

I am advised by Mr. Byron Hutto, Acting Foreman of the Harrison Lake Hatchery that he collected on the James River 2,225,000 eggs. Of this number 326,000 were used experimentally, and the remainder, 1,899,-000 eggs, was set up for production, from which he realized a 58.5% hatch or 1,112,000 shad fry.

Of the 1,112,000 shad fry produced, 585,000 were planted in the James River and Herring Creek and 527,000 were placed in a nursery pond for release in the fall as fingerling shad.

We erected a holding pond at the Pamunkey Hatchery, but same was not completed in time to be used this year, but now is ready for use at the beginning of next season.

Due to the late spring and the very cold weather we had up to May 1st, we were greatly handicapped with the work this season and were prevented from obtaining the eggs and due to this condition our results were far below the results obtained last year, but I am glad to say that our final results were better than I had expected after getting such a late start and such a poor season.

We received splendid cooperation from all parties concerned on all three of the rivers and all of the fishermen were disappointed because we did not have a better season.

Yours sincerely,

J. T. MEYER,
Superintendent of Hatcheries.

EXHIBIT A

RICHMOND, VIRGINIA, *June 20, 1941.*

HON. J. BROOKS MAPP, *Commissioner,*
Commission of Fisheries of Virginia,
Newport News, Virginia.

DEAR MR. MAPP:

I submit herewith my report covering the shad hatching work on the Chickahominy, Mattaponi, and Pamunkey Rivers for the 1941 season as follows:

The Chickahominy River Hatchery was in operation from April 21st to May 31st inclusive, during which time one hundred and seventy-six (176) spawning roe shad were caught and stripped, from which we received a total of 4,614,000 eggs.

The Mattaponi River Hatchery was in operation from April 18th to May 31st, inclusive, during which time sixty-one (61) spawning roe shad were caught and stripped, from which we received a total of 1,537,000 eggs.

The Pamunkey River Hatchery was in operation from April 18th to May 31st, inclusive, during which time ninety (90) spawning roe shad were caught and stripped, from which we received a total of 2,450,000 eggs.

From the above total of 8,601,000 eggs we received a hatch of about 85 or 90 per cent of young shad, all of which were released in the rivers immediately after hatching, with the exception of a portion of those hatched at the Pamunkey Hatchery, which were put in a holding tank, which are now about one (1) inch in length. The number being held in the tank cannot be ascertained until they have grown to a larger size.

I am advised by Mr. Byron Hutto, Acting Foreman of the Harrison Lake Hatchery that he collected on the James River 1,926,000 eggs. From which, he realized a hatch of 74.2% or 1,430,000 shad fry and from this number 157,000 were placed in the nursery pond of the Harrison Lake Station.

We erected a floating holding tank on the Pamunkey River which proved very satisfactory and as stated above we now have shad fry in same about one inch in length, which will be released when they reach the age of three or four months.

During the early part of the season we received wonderful results but towards the last of the season when the market dropped so low, a good number of the fishermen went to work on defense work to receive the high wages being paid, and naturally when the number of fishermen decreased so did the number of the spawning roe catch. However, we had a much better season than the 1940 season as the number of eggs received during last year was 4,713,995 and the increase this season over last amounts to 3,887,005.

We received the full cooperation from all parties concerned on the three rivers and all of the fishermen are very highly pleased with the increase in the shad run which they contribute to the work we have been doing for the past few years and the run was larger this season than it has been for quite a few years in the past.

I hope that the time is not far off when we will be able to secure more money for this work so that we can go into same on a larger scale and get the shad back in the Bay and rivers in large quantities.

Yours very sincerely,

J. T. MEYER,
Superintendent of Hatcheries.

EXHIBIT B

REPORT* OF THE VIRGINIA FISHERIES LABORATORY

To the
Honorable J. Brooks Mapp,
Commissioner of Fisheries of Virginia.

INTRODUCTION

The Virginia Fisheries Laboratory conducts investigational and instructional work in aquatic biology and conservation. The aim of the research work is to find out ways and means for improving the tidewater fishery resources of Virginia through learning how the supply may be maintained or increased, and also harvested so as to assure maximum utilization consistent with long range conservation. This program calls for practical studies on the water conditions affecting local variations in abundance, rate of growth and reproductive habits of commercial species; the relative importance of different areas for fishery operations; successful artificial and semi-artificial cultural practices; and satisfactory methods for preserving the fisheries against predators and uneconomical methods of fishery practice. Educationally, the laboratory program serves to provide a center for the dissemination of facts about the biology of Virginia fisheries and the nutritional and direct economic values of seafood products. High school and college students are reached by these programs of research and instruction.

RESEARCH PROGRAM

The investigational work of the Laboratory includes studies of the life history of commercial forms of Virginia tidewaters and those biological relationships that govern fluctuations in abundance and survival. Attention has been given mainly to (1) the following mollusca—oysters, mussels, clams, and screwborers; (2) the principal commercial crustacean of Virginia waters—the blue crab; (3) the fin fishes—shad and catfish; and (4) physical and chemical conditions of local waters.

Oysters

In the spring of 1941, a program was started to determine the best methods for culturing oysters under natural conditions in local waters. Temperature and salinity records, larval collections and oysters for gonad examination were taken at regular intervals. Each week culch materials were planted and shells were examined for spat. The gonads were well developed in early June and by the end of the month a large percentage of the population in parts of the York and James Rivers was spawning. A few oyster larvae developed as early as the first week in June and by June 13th, counts indicated numbers around twenty-five straight line and umbo stages per gallon of water. Until the last of June, no oyster larvae were found in the waters of Mobjack Bay. The preliminary observations for different parts of the York River indicate a marked variation in the numbers of oyster larvae in the water and also in the time that they first appear. No strike was found before the end of June. These observations are being continued.

Weather conditions during the late fall of 1940 were mild and field experiments showed that growth continued until late November and was resumed in April, 1941. Oysters from 1940 strike fall into two principal

*The period covered by this report is July 1, 1940-June 30, 1941.

size groups. At the end of the growing season about December 1st, the average lengths of these two groups were one-half and one and one-half inches. At this time it is not possible to state definitely the best months for growth. Experiments have been set up to show the areas best suited to growth as well as for strike and fattening purposes. Also, efforts are being made to show whether or not seed transplanted from the James River and Chincoteague, to the York River grow and survive as well as native stock. These oyster studies are being carried out by Mr. Winston Menzel, Assistant Biologist, and Mr. B. B. Shepherd, Research Assistant of the Laboratory.

Mussels

The ribbed mussel, *Volsella demissus*, used commercially in Virginia since 1940, has been intensively studied to determine the available supply and such facts about its biology and method of collection as are needed to establish wise conservation measures. Various culture methods have been tried in the field at Seaford, Fox Hill, Kings Creek (Cape Charles), Elkin Island near Oyster, and at Chincoteague.

The mussel studies have been conducted by Dr. J. H. Lochhead, Associate Biologist, and C. M. Coker, Assistant Biologist of the Laboratory. The histological work on the shell fish was done by Dr. R. P. Ash, Research Associate, assisted by Emma J. Bourquin.

Clams

During the year, observations have been made on the distribution and growth of the hard shelled clam, *Venus mercenaria*, and the soft-shelled *Mya arenaria*. The last mentioned bivalve while abundant commercially in the New England states is not taken in Chesapeake Bay to any great extent. Its rate of growth is much greater than that of the hard-shelled clam. Areas observed in Mobjack Bay and near Seaford have indicated local concentrations numbering as high as 50-60 per square foot and ranging in size from one-half to four inches in length. Generally, however, they are much less numerous and are restricted to local areas where the soil conditions and tidal level are favorable. Histological studies have shown that they spawned as late as November in 1940 and ripened earlier in the spring than the oyster and the mussel.

The hard-shelled clam is taken in commercial quantities throughout Tidewater Virginia. In sampling numerous, widely separated areas of the lower Bay, it has not been possible to locate a sizeable natural bed of small clams suitable for seed purposes. It seems quite definite that the seed grounds, if such occur, are very localized. Men in the clam business are dependent to a large extent on outside sources for seed clams. There is, therefore, a need for cultural methods that will assure a constant and adequate supply of natural seed. Although the growth experiments now being conducted at Oyster, Kings Creek and Seaford are as yet incomplete, they do indicate a very slow rate of growth as compared with the soft-shelled clam or "butterfish" and the oyster. This shows again the need for suitable cultural methods to meet the local demands of the industry.

Screwborers

Field observations have shown that the screwborer, *Urosalpinx cinerea*, is widely distributed in waters of the state having a salinity of twelve or more parts per thousand. They were found up the James River about as far as the River bridge, up the York River a short distance beyond Queens Creek and in greatest abundance and largest size throughout the seaside of the Eastern Shore. With respect to salinity toleration, controlled laboratory experiments have shown that salinities below twelve parts per thou-

sand are distinctly unfavorable for their survival. Thus at ten parts per thousand, their survival time, under experimental conditions, was less than eight days. It seems that in nature they can be expected to survive short periods of freshet. Embryos are less resistant to low salinity than adults. There is evidence that screwborers are unnecessarily distributed due to oyster transplantation work. In an effort to reduce this means of spreading the most important local enemy of the oyster, laboratory experiments are seeking to develop an improved method for preventing their dispersal. Results to date seem to indicate that screwborer embryos, in the capsules attached to the oysters, may be killed by submergence for one minute in copper sulphate solution† having a strength of one part in 500 without injury to the oysters. Rotenone was also tried and preliminary results indicate that a concentration as small as three parts in 1,000 is effective in a fraction of a minute immersion. Possibilities of spraying infected shells with these toxic chemicals to facilitate field use of this method are being explored by Winston Menzel.

The Blue Crab

Studies were made on the distribution of crab larvae in the waters of the lower Bay. The occurrence of larvae of about ten different species of crabs has made it difficult to recognize with certainty those of the blue crab. It has been necessary therefore to study the recognition characteristics of the several species. Sufficient progress has been made to permit a reliable identification of three zoeal stages of the blue crab. These larvae occurred in by far the greatest numbers in the region of Cape Henry. Numerous experiments were tried in an effort to discover a method for hatching out blue crab eggs artifically removed from the parent. It is now possible to hatch out over 3,000 eggs in a tray 9 by 8 inches. A 90 per cent hatch was regularly obtained. Promising results for large scale hatching were obtained by suspending in open offshore waters individual sponges protected against possible enemies by wire screening. Successful methods were devised for removing "sponges" from crabs at commercial houses and for transporting them in good condition to the Laboratory. In the examination of large numbers of "sponges", it was observed that, in a high proportion of them, the individual eggs were infected by a parasite believed to be a fungus. The possible effects of this organism on the development of the eggs was investigated. The importance of this parasite may be considerable since out of 137 sponges examined at random 54 were infected. Efforts were made to rear the larvae of the crab in the laboratory and it was possible to rear them through from the first to the second true zoeal stage. These larval studies were carried on by Dr. M. S. Lochhead, Dr. S. H. Hopkins, Mildred Sandoz and Rosalie Rogers.

Fin Fishes

During the year, about 100 species of local fishes were collected for the laboratory collection at Yorktown. Cooperative work with Fish and Wildlife Service included assistance in tagging of shad during May 1940. In the spring of 1940, catfish studies were begun by Winston Menzel working in the region of the James River and its tributaries. Although annual catches during the last five years have been fairly uniform, fishing effort has been greatly increased. There is evidence that the average weight per fish now being taken is one pound or less as compared with nearly two pounds several years ago. While there still seems to be an adequate number of small fish, the decline in supply of large, marketable fish is pronounced. Analyses of stomach contents reveal that in the spring catfish

†Engle working at the Milford laboratory of the Fish and Wildlife Service in Connecticut reports positive results using copper sulphate.

COMMISSION'S POLICE BOAT "WILL F. KELLAM"

HOLDING FLOAT FOR HATCHERY WORK (IN INSET)

TAKING SOFT CRABS FROM SHEDDING FLOATS

CRAB SHEDDING FLOATS ON EASTERN SHORE

feed principally on herring and vegetable matter including pickerel weed, algae and roots of various plants. Throughout the year they take different aquatic insects, worms, and a variety of small fishes, particularly small menhaden in the fall season.

ADMINISTRATION

The Laboratory has functioned under the joint administration of the Commission of Fisheries and the College of William and Mary, while the United States Fish and Wildlife Service cooperated in the program. Through the aid of a Research Grant from the American Philosophical Society, studies were carried out on certain physical and chemical conditions affecting the supply of available oxygen in the Bay waters. The Laboratory was fortunate in having the cooperation of the E. I. duPont de Nemours and Company in developing the shellfish aspects of the research program. This company provided a subsidy which made possible an extensive conservation study of the biology of the ribbed mussel involving the addition of several members to the Laboratory staff.

ACKNOWLEDGMENTS

The work of the Laboratory has been helped greatly by numerous persons in official and private capacities interested in the advancement of knowledge of fishery biology in Virginia. To all these individuals, the Laboratory expresses sincere thanks. The writer wishes to take this opportunity to acknowledge, on behalf of the Laboratory staff, the kindly assistance and great personal interest in each phase of the fishery program given by the late Honorable G. Walter Mapp, Commissioner of Fisheries and Rector of the College of William and Mary.

Special acknowledgment is made to Dr. D. W. Davis, Head, Department of Biology, for helpful counsel in all aspects of the Laboratory's work; to Dr. R. G. Robb, Head, Department of Chemistry, for use of space and equipment. Dr. Herbert F. Prytherch, Director of the Fish and Wildlife Service Laboratory in Beaufort, N. C., conducted oyster studies in Virginia waters and gave valuable assistance to the Laboratory's work. Also, the Laboratory is indebted to Dr. W. S. Calcott, Director, Jackson Laboratory of the E. I. duPont de Nemours and Company for advice and assistance in the development of the mussel program.

State fishery officials and officers, private citizens and men in the seafood industries of the state have cooperated most generously in a variety of ways. Special thanks are expressed to Captain L. Selden Taylor, Superintendent of Boats and Conservation for valuable assistance and cooperation; to Inspectors L. M. Callis of Seaford, W. C. Crockett of Willis Wharf, W. D. Steelman of Chincoteague, and Frank Garrow of Denbigh, Virginia; and to Mr. E. C. Crockett of Seaford, Mr. George Elliott of Hampton, Menzel Brothers of Toano, Mr. R. N. Steelman of Oyster, Mr. Graham Evans of West Point, Mr. W. T. Quinn of Hampton, and Mr. Bernard Thomas of Yorktown, all of whom have contributed greatly to the practical studies conducted on the marine fisheries.

CURTIS L. NEWCOMBE,
Director.

EXHIBIT C

REPORT OF SUPERINTENDENT OF INSPECTORS, POLICE, BOATS AND CONSERVATION

For the Fiscal Years Ending June 30, 1940 and 1941

October 14, 1941.

HONORABLE J. BROOKS MAPP,
Commissioner of Fisheries of Virginia,
Newport News, Virginia.

DEAR MR. MAPP:

As Superintendent of the Commission of Fisheries of Virginia's field work, I wish to submit my report covering the activities of this Department for the fiscal years ending June 30, 1940, and June 30, 1941.

PATROL FLEET

In the past two years it has become necessary to renew the engines in patrol boats *Victor, Agnes Hope, Katie,* and *Will F. Kellam,* which were worn out in Commission work. As you probably know, our patrol fleet is much smaller than we could use to advantage, and these boats are constantly in use. In the past two years, due to over-age, it was thought advisable to dispose of the motor vessels *Marguerite* and the *Commodore Maury,* which had passed their usefulness to the Commission. All of our boats now are in good running condition, but in most cases are unsuited for the Commission work as they lack speed to run down violators, and it is my hope that in the very near future the Commission may be in financial circumstances to augment their fleet with faster boats more suited for our patrol duties.

CONSERVATION

Attached is a full report on our repletion work for the two years, from which I feel we have obtained very good results, but due to the national emergency our expenses ran a good bit higher for the year ending June 30, 1941, due to the fact that the W. P. A., with whom we were working on this program, could not obtain proper and sufficient labor to carry on this work to the best possible advantage.

The reports from all districts where we have planted shells show that we have a very good catch of oysters on same, which we are now using as seed beds, and will transplant seed oysters caught in these areas to barren bottoms.

Our screwborer work in the vicinity of Chincoteague has been most satisfactory for the past two years, and another year it is my hope to increase this activity, as I think it is the most important work we have in our conservation program.

SHAD HATCHING

During the year 1940 we had a very poor shad season, and did not get the run of roe shad until too late to hatch, on as large a scale as we had hoped for, but the year 1941 we had an excellent run of shad and obtained very good results.

CRABS

We are confronted with a new device known as the "crab pot", which has been very confusing, both to the law enforcement officers, and also to the users of same, as to what would be the best regulations for them. I sincerely hope that the next General Assembly will look into this matter and give serious consideration as to what is the best Statute to draw up for the regulation of this device.

In the year ending June 30, 1941, there was reported a great scarcity of crabs in the shedding areas, both in Virginia and Maryland, and I hope we may be able to take steps to remedy this shortage before another season.

FISH AND OYSTERS

In summing up, the fish and oyster catches have been on a par for the past few years, and the only comments I have to make are that I fear both will be curtailed very much in the coming year due to the young men being drafted and many of the older ones going in defense work. I do not dare make any prophecy as to what the results will be, but hope that the seafood activities of the State of Virginia will not be curtailed to any great extent.

Respectfully submitted,

L. SELDEN TAYLOR,
Superintendent of Inspectors, Boats and Conservation.

STATEMENT OF OYSTERS AND SHELLS PLANTED

During the Period March 1, 1940 to June 30, 1940 (Some of These Were Paid for After the Close of the Fiscal Year, Which Ended June 30, 1940)

JAMES RIVER

20,000	bu.	shells planted at Swash, above Nelms Creek	$ 800 00
8,721	bu.	shells planted at Swash, above Nelms Creek	348 84
28,721	bushels	Total amount	$ 1,148 84

CORROTOMAN RIVER

5,000	bu.	shells planted on Island Bar	$ 175 00
18,714	bu.	shells planted on Island Bar	561 42
19,500	bu.	shells planted on Island Bar	585 00
43,214	bushels	Total amount	$ 1,321 42

PIANKATANK RIVER

3,000	bu.	shells planted at Saga Pt., Milford Haven	$ 105 00
340	bu.	shells planted at Palace Bar	11 90
3,340	bushels	Total amount	$ 116 90

STATEMENT OF OYSTERS AND SHELLS PLANTED—CONTINUED

GREAT WICOMICO RIVER

6,000	bu.	shells planted in Ingrams Bay	$ 240 00
8,000	bu.	shells planted in Ingrams Bay	320 00
10,006	bu.	shells planted in Ingrams Bay	400 24
6,001	bu.	shells planted in Ingrams Bay	210 04
7,000	bu.	shells planted in Ingrams Bay	245 00
3,000	bu.	shells planted in Ingrams Bay	105 00
40,007	bushels	Total amount	$ 1,520 28
500	bu.	shells planted in Rappahannock River	$ 15 00
15,000	bu.	shells planted in Nomini Creek	375 00
10,000	bu.	shells planted in Honest Pt., Coan River	250 00
10,000	bu.	shells planted in Yeocomico River	250 00
3,000	bu.	shells planted at Bar Neck, East River	90 00
11,000	bu.	shells planted at Back Creek, Poquoson River	330 00
49,500	bushels	Total amount	$ 1,310 00

EASTERN SHORE

13,974	bu.	shells planted in Hog Island Bay	$ 279 48
16,026	bu.	shells planted in Nassawadox Creek	320 52
14,970	bu.	shells planted in Pocomoke Sound	486 53
10,030	bu.	shells planted in Deep Creek	325 97
3,006	bu.	shells planted in Nandua Creek	97 70
250	bu.	shells planted in Nassawadox Creek	5 00
8,345	bu.	shells planted in Hog Island Bay	166 90
7,470	bu.	shells planted in Upshurs Bay	149 40
3,750	bu.	shells planted at Nassawadox Creek	75 00
23,056	bu.	shells planted in Edmonds Drain, Hog Island Bay	461 12
7,120	bu.	shells planted in Upshurs Bay, near Quinby	142 40
8,856	bu.	shells planted in Green Channel, Swash Bay	221 40
6,532	bu.	shells planted in Seal Creek, Swash Bay	163 30
7,306	bu.	shells planted in Horsehead, Bradford's Bay	182 65
5,042	bu.	shells planted in Hammocks Flat, Burton's Bay	126 05
3,390	bu.	shells planted in Sound Drean, Burton's Bay	84 75
3,874	bu.	shells planted in Hammocks Channel, Burton's Bay	96 85
142,997	bushels	Total amount	$ 3,385 02

Total amount spent for shells for Eastern Shore and Western Shore ..... $ 8,802 46

The following seed oysters were taken from Aberdeen Rock, York River and planted as follows:

4,000	bushels @ 10c, planted at Green Pt.	$400 00
1,000	bushels @ 10c, planted at Mumfords Island	100 00
5,000	bushels	Total amount $500 00

OYSTER REPLETION FUND

Expenditures for the Period March 1, 1940, Through June 30, 1940. (Some of the Shells Were Paid for After June 30, 1940, But Were Planted Before That Time, So Are Included in the Following Statement)

Wages (Planting and tallying shells)	$	158 50
Repairs		38 57
Traveling		356 22
Transportation		194 62
Communication		20 01
Printing (Tally sheets)		2 38
Motor vehicle supplies (gas, oil, grease, etc.)		21 99
Building Material		32 91
Equipment		17 08
Shells planted in James River		1,148 84
Shells planted in Corrotoman River		1,321 42
Shells planted in Piankatank River		116 90
Shells planted in Great Wicomico River		1,520 28
Shells planted in Rappahannock River		15 00
Shells planted in Nomini Creek		375 00
Shells planted in Honest Pt., Coan River		250 00
Shells planted in Yeocomico River		250 00
Shells planted in the East River		90 00
Shells planted in Poquoson River		330 00
Shells planted on Eastern Shore		3,385 02
Counsel and expert services		1 00
Total for the period March 1, 1940, through June 30, 1940, including those shells paid for after June 30, 1940, which were *purchased* and *planted* before the end of this period	$	9,645 74

See the following table showing the expenditures for the repletion fund for the *full* fiscal year from July 1, 1939, to June 30, 1940, *not* including shells paid for after the close of the fiscal year.

The Following Table Shows the Expenditures for the Entire Fiscal Year—That is From July 1, 1939, to June 30, 1940 (Actually Paid Within the Fiscal Year)

Wages (planting and tallying shells)	$	492 18
Repairs (to equipment, etc.)		104 46
Traveling		720 88
Transportation (of workmen, shells, etc.)		659 32
Communication		42 55
Printing (tally sheets)		7 03
Other expenses (shell planting, etc.)		7,814 45
Motor vehicle supplies (gas, oil, grease, etc.)		47 10
Other supplies		2 00
Building material		103 39
Equipment		49 88
Rent		516 57
Counsel and expert services		1 00
Total for the entire fiscal year from July 1, 1939, to June 30, 1940 (actually paid within the fiscal year)	$	10,560 81

STATEMENT OF OYSTERS AND SHELLS PLANTED

Beginning April 1, 1941, and Ending June 30, 1941

		JAMES RIVER	
40,299	bu. shells planted at Days Pt.		$ 1,611 96
40,299	bushels	Total amount	$ 1,611 96
		CORROTOMAN RIVER	
52,034	bu. shells planted at Corrotoman Pt.		$ 2,081 36
11,400	bu. shells planted at Corrotoman Bar		456 00
63,434	bushels	Total amount	$ 2,537 36
		PIANKATANK RIVER	
17,900	bu. shells planted at Palace Bar		$ 716 00
17,900	bushels	Total amount	$ 716 00
		GR. WICOMICO RIVER	
56,221½	bu. shells planted in Ingram's Bay		$ 2,248 86
1,400	bu. shells planted in Whaley's Flat		56 00
57,621½	bushels	Total amount	$ 2,304 86
		LITTLE WICOMICO RIVER	
4,028	bu. shells planted in Little River		$ 161 12
4,028	bushels	Total amount	$ 161 12
		EAST RIVER	
4,000	bu. shells planted at New Diggs Wharf		$ 160 00
4,000	bushels	Total amount	$ 160 00
		EASTERN SHORE	
40,000	bu. shells planted in Edmond's Drain, Hog Island Bay		$ 1,000 01
6,800	bu. shells planted on Indian Rock, Magotha Bay		136 00
8,760	bu. shells planted at Armstrongs Drain, Cobbs Island Bay		131 41
24,320	bu. shells planted in Upshurs Bay		608 04
3,465	bu. shells planted in Cedar Island Bay		86 63
1,554	bu. shells planted in Metompkin Bay		38 85
8,469	bu. shells planted in Hammocks Flats		232 91
6,531	bu. shells (mussel) planted in Kellam Drain, Burtons Bay		130 62
99,899	bushels	Total amount	$ 2,364 47

The following shells were also planted on Eastern Shore, but were given us, and we paid transportation on same:

3,500 bu. shells planted at Kegatank Bay.
2,718 bu. shells planted at Cockle Creek and Queen Sound.

STATEMENT OF OYSTERS AND SHELLS PLANTED—CONTINUED

6,791 bu. shells planted in Egg Marsh.
1,230 bu. shells planted in Egg Marsh.

Seed oysters purchased from James River at 10 cents per bushel, and planted in the following locations:

3,618 bu.	seed oysters planted in Poquoson River	$	361 80
3,548 bu.	seed oysters planted at Bluff Point in Deep Creek, at mouth of the Warwick River		354 80
2,979 bu.	seed oysters planted on Page's Rock, York River		297 90
10,145 bushels	Total amount	$	1,014 50

Approximately 30,000 bushels of seed oysters were planted in District No. 11 in the following places: Cape Toon Rock, Ginny Point and Queen's Spring.

OYSTER REPLETION FUND

Expenditures for the Period March 1, 1941 Through June 30, 1941

Wages (Planting and tallying shells, etc.)	$	1,403 67
General repairs		12 11
Traveling		171 92
Communication		9 45
Printing (tally sheets)		3 51
Motor vehicle supplies (gas, oil, grease, etc.)		43 06
Shells planted on the Eastern Shore		2,364 47
Shells planted in the James River		1,611 96
Shells planted in Corrotoman River		2,537 36
Shells planted in Piankatank River		716 00
Shells planted in Great Wicomico River		2,304 86
Shells planted in Little Wicomico River		161 12
Shells planted in East River		160 00
Seed oysters from James River		1,014 50
Rent (boats hauling shells, etc.)		1,411 26
Miscellaneous shell planting		98 66
Total for the period March 1, 1941, through June 30, 1941	$	14,023 91

NOTE: The foregoing expenditures are for the shell planting season. We usually start planting shells around March or April, and lots of times the shells which we purchase during this time are not paid for until after the close of the fiscal year. In cases where amounts were spent for the *purchase* of shells we have shown that amount, even though it may have been paid right after the close of the fiscal year.

The following table shows the expenditures for the entire fiscal year—that is from July 1, 1940, to June 30, 1941 (actually paid within the fiscal year).

OYSTER REPLETION FUND—CONTINUED

Wages (planting and tallying shells, etc.)	$ 1,817 67
Repairs (repairs to equipment, etc.)	63 70
Traveling	472 70
Transportation (transportation of shells, workers, etc.)	9 00
Communication	20 01
Printing (tally sheets)	6 51
Other expenses (shell planting, etc.)	6,354 23
Motor vehicle supplies (gas, oil, grease, etc.)	68 15
Other supplies	1 20
Building material	5 09
Equipment	64 20
Rent (rent of boats, etc.)	1,671 89
Total amount spent for the *entire* fiscal year	$ 10,554 35

SHELL PLANTING

Spring and Summer 1941

Number Bushels Planted	Location	Kind of Bottom	Depth	Area Planted	Oysters per Bushel Results
48,300	Great Wicomico Flats	Hard oyster bar	4½–7 feet	5–10 acres	900
4,028	Little River	Mixed bottom	6 –7 feet	2 acres	90
28,000	Piankatank River	Hard oyster bar	4½–5 feet	9 acres	400
4,000	East River	Hard oyster bar	2 feet	1½ acres	700
53,000	Corrotoman River	Hard oyster bar	6 –7 feet	14 acres	800
20,000	Island Bar	Hard oyster bar	5 feet	6 acres	1,000–planted in 1940
40,299	James River	Hard oyster bar	7 feet	15 acres	

EXHIBIT D

Report of Engineer

October 6, 1941.

HONORABLE J. BROOKS MAPP,
Commissioner of Fisheries,
Keller, Virginia.

DEAR SIR:

After completing the triangulation of James River, the calculation for area of the oyster planting grounds, in Isle of Wight County, and the preparation of three (3) maps covering that area in the first part of 1939, no attempt was made during the fiscal years of 1939-40 and 1940-41 to undertake any large scale operations or extensive surveys. Triangulation stations had been established and marked by concrete monuments, or galvanized iron pipe had been established on every larger body of water in Tidewater, with the exception of Hampton Roads and Elizabeth River.

In these waters a great number of United States Coast Survey and United States Engineer stations would possibly be sufficient, in case a complete survey of oyster planting bottoms should be undertaken.

In connection with this, I believe it would be well to make a survey in the above area; not only as a check-up on areas held by planters, but also as a definite location of these grounds in matter of information often desired, not only by our own office, but also by the State Board of Health, and the United States Engineers in their harbor improvement activities, dredging channels, et cetera; but, this survey should not be undertaken until present conditions have changed.

At the request of the oyster inspectors, the lines of the public grounds in the Piankatank River and part of York River were re-established, but we wish to call your attention to the fact that this is an endless, and expensive job; unless the corners, at the time of the survey, are marked by *suitable* stakes and *maintained.*

Upon petition of the oystermen of that locality, the corners of the public ground in Milford Haven were relocated and well marked, but, unless, as stated above, new stakes are put down at these corners every year, time and expense are wasted.

There appeared very little encroachment on the public area in the Haven, if you except such as had been shown by the survey of 1920, but had never been acted upon.

The survey of the oyster planting grounds in Horn Harbor has been completed. It shows all the planting grounds in that area, and is a great help to the inspector as it has made quite a lot of ground in that body of water available for assignment.

The survey of Dyers Creek, an adjacent body of water, has been held up so far, as we have not been able to find the necessary help, on account of present conditions.

Outside of the people engaged in fishing, seamen are in great demand, and very few idle men can be found in Tidwater.

A new triangulation survey of Jackson's Creek, and Fishing Bay, has been tied in with stations of the Piankatank Survey of 1920. Twenty-six (26) new stations have been marked by galvanized iron pipe, so that surveys of planting grounds, in this area, can be easily made, platted on the map and checked as to location, any time.

Many individual surveys of oyster planting ground were made by the Engineer in the two years, but the great majority of these were surveys of small areas.

The records of the Chief Clerk's office give the number of acres assigned during the period from surveys made by the Engineer as 5,398.18 acres, with plats for 1,121.13 acres on file, but not assigned or delivered to applicants, making a total of 6,519.31 acres.

The number of acres surveyed by all other surveyors was 3,736.68.

This acreage does not include the acreage found by general survey in Horn Harbor, except in cases where a new assignment was made in accordance with the new survey.

In Milford Haven, where most of the planting grounds some years ago became absolutely worthless on account of the eelgrass taking charge of all available bottoms, a number of disputes as to the proper location of the old surveys arose after the grass disappeared, and planters started to use these bottoms again. It is often impossible to relocate an old survey from the data given on the recorded plats, even assuming that these surveys were correct and would give the true corners, but I think we have satisfactorily settled all cases that have been brought to our attention, and the planters in such cases have accepted new assignments after this ground was surveyed by engineer.

On the other hand, as ground appears to be very much in demand in the Haven at this time, there arose another contention there, on account of new applications for ground, supposedly being held by planters, but not in their survey.

Right here, we wish to point out the easy matter of locating ground in the Haven from surveys made since triangulation points were established there by me, 1920, and since we have made it obligatory, that all surveys must be made from these triangulation points or properly referred to them.

The Engineer, some years ago, got out a pamphlet of instructions to surveyors, showing how surveys of oyster planting ground should be made, and by holding other surveyors to these methods prescribed, we will avoid a lot of trouble as to the location of grounds, both private and public.

The American Geographical Magazine gives, in its last issue, a very fine account of oyster planting ground in Long Island Sound, nicely illustrated, and with a small scale map showing leased grounds, and I could only think, that that was the very thing that I had been fighting for in Virginia single-handed for years,—single-handed and with very little aid and encouragement outside from the United States Coast Survey.

I have located hundreds of triangulation points marked by me with monuments in Tidewater Virginia these last twenty-four (24) years, and have been called upon for over forty (40) years to locate disputed lines in the waters of this Commonwealth, and with this experience, can only repeat the sentence of my last report regarding these monuments.

> "It is very important, that, to preserve the triangulation points established by the Engineer of this Commission in his surveys he should make a trip by boat fitted out for that purpose, once a year over all waters that have been surveyed by him, check on all triangulation markers and establish new ones when the old are in danger of being washed away.
>
> "Triangulation is very expensive and while it is an easy matter to keep the stations up, if proper attention is paid to it in time, it is certain, that, if neglected, this work of relocation of new monuments will prove as expensive as the first survey."

Confidence in the work of the Engineer materially aids him, and in the same manner takes all chances of doubt out of a decision by the Commission in cases of disputes over lines that may come before them.

A point may be accepted as true to location when the Engineer says he has, without doubt, established a wanted position,—but this can never, with the public, compare to evidence found on the spot when the monument appears to be lost, and when the Engineer says: THIS IS THE SPOT. DIG DOWN, and the monument is found possibly two (2) feet under the surface buried by the sand that has washed over it.

It has taken a great amount of money and time to make surveys and to neglect the keeping up of individual stations or markers, which can be done at small expense, is a criminal neglect in the eyes of an Engineer.

As for old surveys made without reference to geodetic control, I have often been amused by intelligent people imagining, that all a surveyor had to do is to go to the Clerk's Office of the County in which a certain assignment is recorded, copy the notes and, Presto!—Locate the ground from that information.

This might be done in one out of a thousand cases; if the survey is anything like twenty (20) years old, it is an impossibility.

Surveys with Geodetic Control can be re-established any time, even should some of the markers disappear.

Under an agreement with the Conservation Department of Maryland, we are keeping up all buoys and markers defining the line between the States across Pocomoke and Tangier Sounds, we paying one-half of the cost of maintenance.

In appreciation of your support for better surveys, I am

Very truly yours,

FRED E. RUEDIGER,
Engineer.